

CLAIMS

1. Method for transmitting data stream via wireless medium for contention based medium access across a wireless network having a plurality of stations and an access point communicating to said stations via wireless medium, the method comprising:

(i) performing a contention between the stations for wireless medium occupancy for a station to transmit data stream at a selective contention period;

(ii) transmitting data stream from the contention successful station after the contention,

wherein the selective contention period is divided into two distinct period as:

(a) contention medium occupancy period at which the stations contend for wireless medium occupancy for a station to transmit data stream; and

(b) prescheduled medium occupancy period at which a wireless medium occupancy reservation for a contention successful station is prescheduled.

2. Method for transmitting data stream via wireless medium for contention based medium access across a wireless network having a plurality of stations and an access point communicating to said stations via wireless medium, the method comprising:

(i) transmitting data stream from the station according to prescheduled wireless medium occupancy reservation for the station within prescheduled medium occupancy period of a selective contention period;

(ii) performing a contention between the stations for wireless medium occupancy for a contention successful station to transmit data stream within only contention medium occupancy period of the contention selective period;

(iii) transmitting data stream from the contention successful station after the contention; and

(iv) prescheduling a wireless medium occupancy reservation for the contention successful station to transmit within a prescheduled medium occupancy period of next selective contention period.

3. Method according to claim 1 or claim 2, wherein the access point transmit a beacon signal including an information about start period of the contention medium occupancy period to each station, whereby selective contention between the stations is performed.

4. Method according to claim 3, wherein the beacon signal, the prescheduled medium occupancy period, and the contention medium occupancy period are provided in turn in the selective contention period.

5. Method according to any one of claims 1 to 4,

when a station is successful for a contention at the contention medium occupancy period of the selective contention period, a wireless medium occupancy reservation having a duration period for the contention successful station is prescheduled within a prescheduled medium occupancy period of next selective contention period, then start period of a contention medium occupancy period of next selective contention period is moved forward from the start period of the contention medium occupancy period of the selective contention period by the duration period.

6. Method according to any one of claims 1 to 4,

when a first station is successful for a first contention at the contention medium occupancy period of the selective contention period, subsequently a second station is successful for a second contention after the first contention,

a first medium occupancy reservation having a first duration period for the first station is prescheduled within a prescheduled medium occupancy period of next selective contention period, subsequently a second medium occupancy reservation having a second duration period for the second station is prescheduled after the first medium occupancy reservation within the prescheduled medium occupancy period of next selective contention period,

then start period of a contention medium occupancy period of next selective contention period is moved forward from the start period of the contention medium occupancy period of the selective contention period by sum of the first duration period and the second duration period.

7. Method according to claim 6, wherein the start period and the duration period of transmissions from the first and second stations according to the scheduled wireless medium occupancy reservation are recorded in both the first and the second stations.

8. Method according to any one of claims 1 to 7, wherein the station monitors condition of the wireless medium occupancy in the selective contention period, and records the condition, then transmission timing is determined according to the condition of the wireless medium occupancy recorded.

9. Method according to any one of claims 1 to 8,

when the access point receives null packet transmitted at the transmission timing according to prescheduled wireless medium occupancy reservation having a duration period for the station, the prescheduled wireless medium occupancy reservation will be cancelled, then start period of the contention medium occupancy period of next selective contention period will be moved back by the duration period.

10. Method according to any one of claims 3 to 9, wherein the beacon signal further includes information with respect to:

(i) start period and end period of selective contention period having the contention medium occupancy period and the prescheduled medium occupancy
5 period of the selective contention period; and

(ii) duration period of the selective contention period.

11. Method according to claim 10, wherein the beacon signal further includes information with respect to start period and duration period of prescheduled
10 wireless medium occupancy reservation within the prescheduled medium occupancy period.

12. Method according to any one of claims 1 to 11, wherein the station transmits data stream having last packet including reservation parameter for wireless medium occupancy reservation having a duration period in
prescheduled medium occupancy period of next selective contention period,

15 the access point receives the reservation parameter included in last packet, wireless medium occupancy reservation for the station will be prescheduled in prescheduled medium occupancy period of next selective contention period, then the start period of the contention medium occupancy period will be moved forward by the duration period.

20 13. A wireless network system comprising a plurality of stations and an access point communicating with the stations via wireless medium,

the access point comprising:

a medium recorder unit which records:

(i) start and end period of contention medium occupancy
25 period in which stations contend for wireless medium occupancy for a station to

transmit data stream, wherein the contention medium occupancy period is included in a selective contention period; and

(ii) start and end period of prescheduled medium occupancy period in which wireless medium occupancy is prescheduled, and transmission is performed according to the prescheduled wireless medium occupancy, wherein the prescheduled medium occupancy period is included in the selective contention period;

a controller unit which preschedules wireless medium occupancy reservation having a duration period for contention successful station in prescheduled medium occupancy period, and moves forward the start period of contention medium occupancy period of next selective contention period by the duration period;

a transmitter unit which transmits a beacon signal including information for start period of the contention medium occupancy period to the stations; and

a receiver unit which receives data stream transmitted from the station,

at least one station comprising:

a receiver unit which receives the beacon signal including information of the start period of the contention medium occupancy period transmitted from the access point via the wireless medium;

a transmitter unit which transmits data stream via the wireless medium;

a medium recorder unit which records transmission record; and

a controller unit which extracts the information of the start period of

the contention medium occupancy period from the beacon signal, and monitors condition of wireless medium occupancy at every monitoring period among the start period and the end period of the contention medium occupancy period, then instructs the transmitter to transmit data stream when the controller unit confirms
5 that wireless medium is not occupied.

14. An access point communicating with a plurality of stations via wireless medium, the access point comprising:

a medium recorder unit which records:

(i) start and end period of contention medium occupancy period in
10 which stations contend for wireless medium occupancy for a station to transmit data stream, wherein the contention medium occupancy period is included in a selective contention period; and

(ii) start and end period of prescheduled medium occupancy period
in which wireless medium occupancy is prescheduled, and transmission is
15 performed according to the prescheduled wireless medium occupancy, wherein the prescheduled medium occupancy period is included in the selective contention period;

a controller unit which preschedules wireless medium occupancy reservation having a duration period for contention successful station in
20 prescheduled medium occupancy period, and moves forward the start period of contention medium occupancy period of next selective contention period by the duration period;

a transmitter unit which transmits a beacon signal including information for start period of the contention medium occupancy period to the stations; and

25 a receiver unit which receives data stream transmitted from the station.

15. An access point according to claim 14,

when the receiver unit receives a null packet transmitted at the transmission timing according to prescheduled wireless medium occupancy reservation having a duration period for the station, the prescheduled wireless medium occupancy reservation will be cancelled, then start period of the contention medium occupancy period of next selective contention period will be moved back by the duration period.

16. A station communicating with an access point via wireless medium, the station comprising:

a receiver unit which receives a beacon signal including information of start period of contention medium occupancy period transmitted from the access point via the wireless medium, wherein in the contention medium occupancy period the station contends with other station for wireless medium occupancy to transmit data stream;

a transmitter unit which transmits data stream via the wireless medium;
a medium recorder unit which records transmission record; and
a controller unit which extracts the information of the start period of the contention medium occupancy period from the beacon signal, and monitors condition of wireless medium occupancy at every monitoring period among the start period and the end period of the contention medium occupancy period, then instructs the transmitter to transmit data stream when the controller unit confirms that wireless medium is not occupied.

17. A station according to claim 16,

when the station is successful for a contention at the contention medium occupancy period of the selective contention period, and acquires a wireless

medium occupancy reservation having a duration period for the contention successful station, then the station extracts information of start period of the contention medium occupancy period of next selective contention period, and begins to transmit data stream at a time before the start period of the contention medium occupancy period by the duration period.

18. A station according to claim 16 or 17, wherein the medium recorder unit records the medium record including condition of wireless medium occupancy in both the contention medium occupancy period and the prescheduled medium occupancy period of the selective contention period,

wherein the controller unit calculates transmission timing at which the station transmits data stream in the prescheduled medium occupancy period according to the transmission record.

19. A station according to claim 16,

when first and second stations are prescheduled respectively within the next prescheduled medium occupancy period, and the first station's transmitter unit transmits a null packet which is a kind of broadcasting packet sent to all stations in order to release its own prescheduled wireless medium occupancy, and the second station's receiver unit receives the null packet from the first station, then the controller unit of the second station realizes that the prescheduled wireless medium occupancy reservation for the first station is cancelled, and rearranges its transmission order of the second station within the next prescheduled medium occupancy period by using the medium record recorded by the medium recorder unit of the second station.